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# Utah PM2.5 Fact Sheet

**Revised 10/5/2009**

## What is it?

PM2.5 is the "indicator" of what is commonly called "fine particulate" matter. Fine particulate differs from coarse particulate (e.g. windblown dust) in terms of its chemical makeup, the way it disperses in the atmosphere, and most importantly in the way it affects the human body. The name PM2.5 denotes that it includes all particulate matter that has an aerodynamic diameter of 2.5 microns or smaller. A micron is one millionth of a meter.

## Why is PM2.5 important?

Fine particulate lodges deeply into the tissue of the lung and is not easily dispelled. It causes both respiratory and cardiac illness, and has been linked to premature mortality in healthy individuals.

## PM2.5 in Utah

Utah is relatively unique with respect to its problems with fine particulate. The air in our state is generally very good, except at times during the winter months when high pressure temperature inversions effectively trap the air in our mountain valleys. Under those conditions the pollution we routinely emit cannot dissipate. Compounding the problem, those atmospheric conditions are also suitable for the creation of wintertime smog. Photochemical reactions involving "precursor" gasses result in what is called "secondary" particulate. In other words, these particles did not exit a source of emissions as particulate matter; rather, they were created some time later and some distance away from the source. Most of the particulate that we monitor during winter is secondary particulate, and most of the secondary particulate is ammonium nitrate ($NH_4NO_3$.)

## Why are we talking about PM2.5 now?

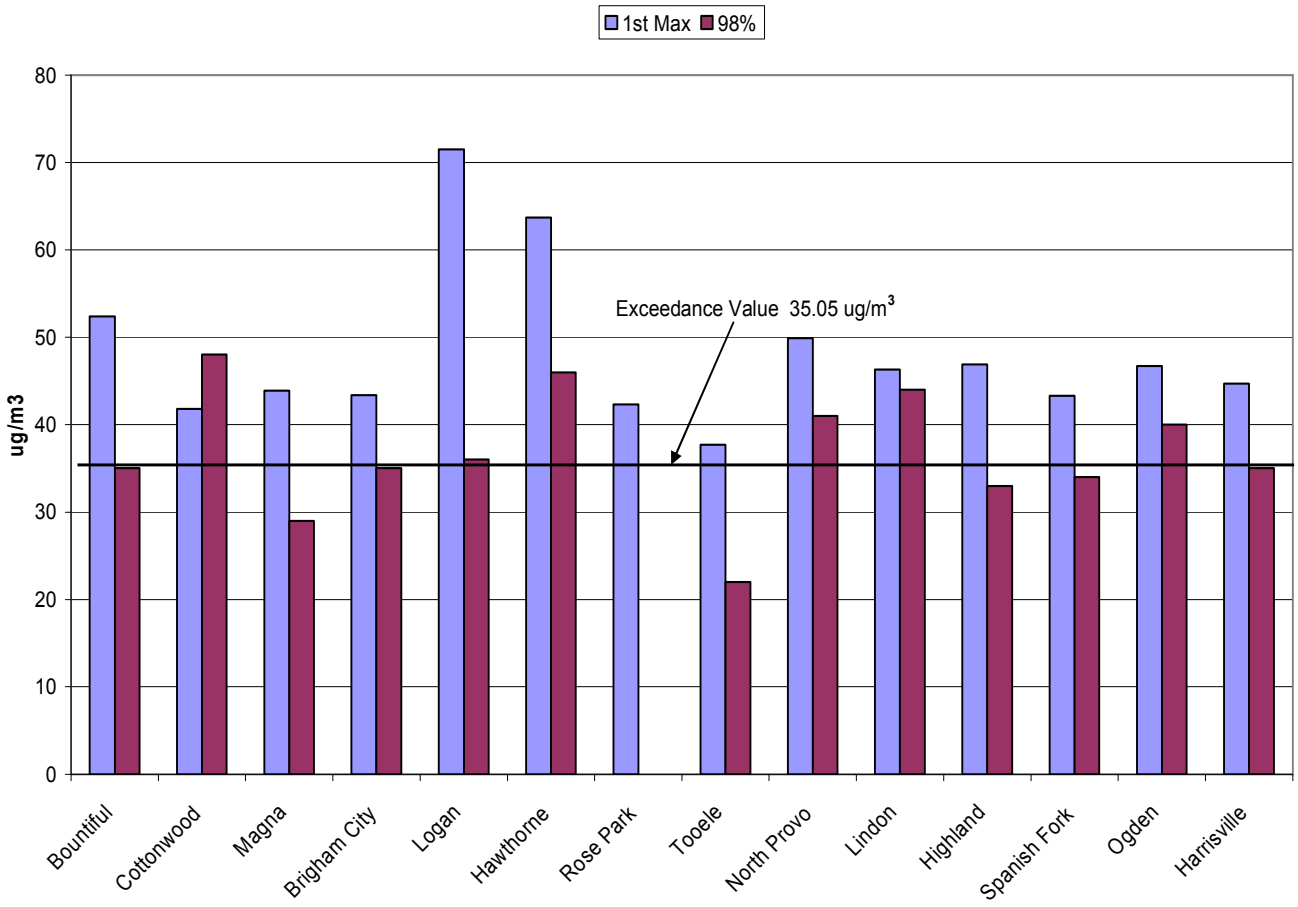
Particulate matter is one of six "criteria pollutants" identified in the Clean Air Act. As such, the EPA is obligated to establish federal health standards and ensure that the ambient air we all breathe is within these standards. The Act also requires that EPA periodically re-evaluate the standards it has set and revise them if necessary.

EPA began its regulation of particulate matter (in 1970) with TSP, or "total suspended particulate." In its subsequent periodic reviews of the health standards, the EPA has narrowed its focus to the smaller particles, establishing PM10 (10 microns and smaller) as the indicator of all particulate matter in 1987 and adding PM2.5 as the indicator of fine particulate in 1997. EPA's health standard for PM2.5 includes both an annual averaging period and a 24-hour averaging period. In 2006, EPA revised the 24-hour standard for PM2.5, lowering it from 65 micrograms per cubic meter ($\mu g/m^3$) to 35 $\mu g/m^3$.

While air in all areas of the state was better than the 1997 standards for PM2.5, the lowering of the 24-hour standard in 2006 means that the Cache Valley and the Wasatch Front are now out of compliance with the federal health standards for particulate matter.

To address this issue of noncompliance, Utah will have to develop State Implementation Plans (SIPs) to meet the new standards. Utah has developed SIPs in the past to address both TSP and PM10.

**2008 highest value (1st Max) and 2006-2008 98th Percentile Average**



**EPA's 2008 intended designation areas for the revised PM2.5 standard**